1: Petrullo E-3 (1933-34) 1939 SS19 Yaruro SS19

511 superfluous needs to be dispensed with every time camp is moved,
361 which occurs every few days. Only in thoughts and feelings can they be as rich as any other people; but this requires a particular kind of temperament possessed by only a few individuals in the tribe.

182 Their economic life, social organization, mythology, and religion form a well-knit pattern of existence. There are no loose ends, but a knot here and there appears in the form of vagueness or contradiction. But I think that the fault lies with us who would introduce our type of organization into their knowledge. We expect more from a primitive group than we ourselves could offer. Besides, it is doubtful whether we ever present the picture of their culture as they see it; if we did we might not understand or we might even be surprised at its orderliness.

177 Although the Yaruros have been in touch with Euro-American cul-
121 ture for several centuries they have borrowed remarkably little. What culture they possessed several centuries ago we do not know. There is practically no information about them in the literature. There is justification, therefore, in publishing this record, in spite of many apparent deficiencies. Since plans for another visit to fill in the gaps in my field notes have not materialized and the Yaruros may be gone before another ethnologist can live with them it seems advisable to make this material available.

121 Anthropology, among other things, is concerned with the interrelationships of groups of men and with the functions of social structures as developed by man and his environment. I have tried to keep in mind that in presenting a first account of an unknown people it may not be at all out of place to draw a general but intimate picture of the daily life of the Yaruros, their emotional, cognitive and conative responses to the world about them, and even their attitude toward the ethnologist who appeared among them with only the objective of hold-
123 ing friendly conversations about themselves. At first they were suspicious, but they soon caught the point and enjoyed the experience as much as I did. An attempt has been made to give these pictures, and to explain the series of events which made possible with these nomads the intimate association that followed the first few days of unfriendliness.

124 No attempt has been made to reconcile differences in the information
● 128 obtained from various informants, not even if there is a contradiction. It was the first time that the Yaruros had been asked to organize their knowledge of their own culture; contradictions and vagueness were to be expected. My informants were exclusively men, even for those
123 phases of culture which admittedly belong to the female world. A cultural obstacle which I respected prevented any direct social intercourse with the women. The women's domain is respected by the

2:Leeds E-5 (1958)1961 SS19 Yaruro SS19

YARURO INCIPIENT TROPICAL FOREST HORTICULTURE

Possibilities and Limits

Anthony LEEDS

The immediate concern of the papers in this symposium is the interaction between human populations and their habitats through the agency of horticulture insofar as factors in this interaction result in the evolution of culture. The present paper discusses an Incipient Tropical Forest Slash-and-Burn Horticultural group, the Yaruro of the south-central Venezuelan llanos, in order to show what kinds of upper limits were set upon its development by its technology and habitat, or both, and what sorts of factors within the relatively limiting conditions of incipient tropical forest horticulture might have provided a foundation for evolution to a more developed state. For any of the cultures which are examples of this class of horticulturalists, slash-and-burn horticulture plays a considerable, but usually not, by itself, a dominating role in the total food procurement process. The Yaruro fall between the Incipient and Intermediate Tropical Forest types discussed in the introduction, whereas the Sirionó, for example, represent a culture near the lower limits of cultures of the type. Despite their somewhat more advanced condition, what pertains to the Yaruro, in a general way applies to the rest of the type.

We shall consider first the habitat conditions in which the Yaruro find themselves and then describe the major dimensions of their swidden horticultural technology. With these aspects of the total ecology before us we shall show how its characteristics provide us a model for our incipient tropical forest stage and at the same time demonstrate how its special ecological conditions inhibited its further evolution into the more advanced stages of horticulture.

The Venezuelan llanos stretch as a low inland plain from the Orinoco delta, W by WSW, 750-800 miles inland, to the edges of the Andes in the far west of Apure State and into Eastern Colombia. The Yaruro are found between 450 and 600 miles from the mouth of the Orinoco, but still inside Venezuelan frontiers. They are found on all the rivers from the Arauca to the Cinaruco, inclusive, a distance of about 90 miles from north to south.

1 [probably should read: which--Analyst]

within these 800 acres, much is occupied by the streams, calculated at their flood maxima which define non-gardenable areas, while other parts are inadequate in soils or water for use as gardens. Consequently, the actually tillable areas comprise a maximum of about 200 acres or about 0.5% of the land surface. It should be noted, of course, that all these 200 acres are not usable for crops since those in the *mesites* cannot be used for cane and bananas, while the wet areas nearest the streams cannot be used for corn or manioc. Thus the maximum area for the staple crops, manioc, corn, and bananas, is about 145 acres (see Table I).[1] [11]

Using Carneiro's equations, [12] we may estimate the maximum population which would be in equilibrium with this acreage, estimating .5 acres as an approximate amount of land required to provide the average person with the food he ordinarily derives from cultivated plants per year. [13] The calculation gives us 92 persons (see Figure 1). [14] We may also estimate the number of years (L) the group may stay in the present locality with its present population of 24 before wearing out the available tillable land so that they would have to move (see Figure 2). This would be 50 years. Since the entire fallow and planting cycle of any piece of land is only 13 years, under present circumstances, the Totûdoro Yaruro will not have to move from their present territory at all, in view of their small and decreasing population.

[128]

Figure 1

$$P = \frac{\frac{T}{(R+Y)} \times Y}{A}$$

$$P = \frac{\frac{200}{10+3} \times 3}{.5}$$

P = 92 (=87 if R is 15)

Figure 2

$$L = \frac{T}{\frac{P \times A}{Y}}$$

$$L = \frac{200}{\frac{24 \times .5}{3}}$$

L = 50 years

R = year of fallow
Y = years of productivity
A = land used to provide plant food for one person a year
P = population
L = number of years group located in one place
T = acres of cultivable land within walking-working distance of village

[262] The ideal figures given above would be somewhat modified upwards by the additional foods provided by fishing, hunting, and gathering which, in the wet season, constitute about 30% of the diet and, in the dry, perhaps

[1] [for Table I see pp. 28-30, category 116--Analyst]
[11,12,13,14] [for footnotes, see p. 43, category 116--Analyst]

3:Leeds E-5 (1958) 1962 SS19 Yaruro SS19

distance of the gardens is too far from the village for effective or efficient exploitation. At this point a village or part of a village must move. Moving the villages involves decision-making with respect to time, new location, and so on. Plainly, moving a village involves a community decision. A community institution for handling the decision-making is necessary. Technologically speaking, the moving itself is not a community task and does not involve supervision and direction. Therefore, one would not expect the institution of decision-making to be a directive one, but a consultative one. Again this corresponds to the observed modes of action of the Yaruro chiefs. The chiefs' function is to facilitate the formation of the decisions of the community by funnelling and interpreting individuals' feelings and expressions to the rest of the members of the community.

In sum, I have presented a model of a form of ecology which, hypothetically, determines the limits within which any sort of chiefly functions may operate. This model, again hypothetically, is applicable to all cultures having the kind of technological and habitat characteristics and forms of surplus here described. I think the model applies particularly to cultures which grow root-crops such as manioc, which utilize no labor-concentrative techniques, such as irrigation, and for whose food resources notable seasonality is absent. Such cultures have been noted widely in tropical South America and also in Melanesia. In both areas, chiefly functions are notably limited as contrasted, say, with Circum-Caribbean corn-raising cultures with some irrigation and other intensive techniques[24] and with Polynesian high cultures with elaborate irrigation and other public works.[25] It should be noted, first, that the Yaruro were not far from these Circum-Caribbean chiefdoms and even show a number of trait similarities, and, second, that the Yaruro have been under Spanish acculturation, which has involved encouragement of chiefly functions, for probably 250 years. Yet, despite the pressures of both diffusion and acculturation to produce a more developed chieftaincy, the attenuated form described persists. The explanation of this persistence seems to me to be ecological. I suggest that the model of explanation presented here is based on a set of analytic dimensions — the characteristics of the technology, those of the habitat, those of the harvest surplus, and the interrelationships of these — which may be used for all cultures, but whose formal, systemic relations vary from culture to culture, or class of cultures to class of cultures, thus giving different models for different cultures or classes of cultures. By using such dimensions, one can account for cultural differences by means of a standard set of principles, thus facilitating genuine comparisons and generalizations.

Bibliography

CARNEIRO, ROBERT
1961 Slash-and-Burn Cultivation among the Kuikuru and its Implications for Cultural Development in the Amazon Basin. *In*: Wilbert, ed., 1961.

DICE, LEE R.
1952 Natural Communities. University of Michigan Press, An Arbor.

[24] Cf. Sturtevant, 1961; Reichel-Dolmatoff, 1961.
[25] Cf. Sahlins, 1958.

/14 cont./

O 115 361 In 1949 Catalina still had three brothers, Ramón, Pablo, and Nicolas, and a sister, Guadalupe. The first brother was living on the island of Fraile in the Orinoco--his existence had been confirmed for us by a trader of the Orinoco--and the two others in San Fernando in Apure, where they were employed in the firm, Casa Hermanos Vivas. The sister was also living in San Fernando. All four had been born in Los Caballos, whereas Catalina, older than they, had first seen the light of day on the Orinoco at a time when, no doubt, the Otomaco were still living along the river. According to our informant, Pedro Ramón Camacho, in addition to these five survivors, an old Otomaco woman, also Racional like the others, was living at Lucero, a farm situated on the right bank of the Capanaparo, at the time of our investigations. Finally, according to another source, some Otomaco still existed at this same time in Colombia on the banks of the Meta.

Y 128 III. Complementary observations on the habitat of the Yaruro (28)

28. See "infra" IV List...36.

The observations made are reproduced on the two tables which follow. They are summarized for certain communities in the notes below:

Y No. of the community

342 361 2a This community No. 2 is initially located (No. 2a) on a dune of sand and earth swept by wind and relatively little assailed by mosquitoes. It has five habitations of type II 1a. The chief's habitation is to the west; the others are spread out along the same line toward the southeast. The shaman's habitation is the one in the middle. The fourth from that of the chief of the community appears to be reserved, according to the latter, for children and for passing guests.

Y [485]